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Physical Configuration Audit of the MITRE LAD

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The purpose of this project was to conduct a configuration audit of the MITRE Local Area Network (LAN) Access to the Department of Defense Intelligence Information System (DODIIS) prototype. This configuration audit of the MITRE LAD has three objectives: (1) to identify the required hardware components; (2) to identify the required software components; and (3) to identify any software licensing concerns. In meeting these objectives, we acquired, assembled and installed a LAD prototype within our facilities. The evaluation LAD was based on the 18 September 1990 release of the MITRE LAD software, Novell Version 2.15, and DOS compatible workstations and file servers.

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PHYSICAL CONFIGURATION AUDIT OF THE MITRE LAD
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1. INTRODUCTION

Georgia Tech Research Institute has been tasked by the Directorate of Intelligence, J2, Forces Command (FORSCOM) to conduct a configuration audit of the MITRE Local Area Network (LAN) Access to the Department of Defense Intelligence Information System (DODIIS) prototype. This prototype system will be referred to as the MITRE LAD throughout the remainder of this document. The purpose of this document is to provide the results of GTRI's configuration audit. The MITRE LAD prototype is a local area network of FAISS workstations intended to provide secure access to DODIIS. The primary objective of the MITRE LAD is to provide network connectivity for FAISS workstations on a local and global scale.

GTRI's configuration audit of the MITRE LAD has three objectives: (1) to identify the required hardware components; (2) to identify the required software components; and (3) to identify any software licensing concerns. In meeting these objectives, GTRI acquired, assembled and installed a LAD prototype within GTRI facilities (GTRI evaluation LAD). The GTRI evaluation LAD was based on the 18 September 1990 release of the MITRE LAD software, Novell Version 2.15, and DOS compatible workstations and file servers.

GTRI took delivery of the LAD prototype software and documentation from MITRE Corporation. The LAD delivery did not include any hardware. The LAD software was delivered on 20, 5.25" high density floppy disks. The disks, numbered one through 16, contained the LAD software and application programs, and the remaining four disks contained LAD specific updates for the Novell operating system.

The MITRE LAD prototype documentation consisted of five manuals: (1) LAD Manual Release 1.0, (2) General User Manual, (3) LAD Security Officer (LSO) System Administrator (SA) manual, (4) Software Design, and (5) Emerald Installation Guide.

By constructing the GTRI evaluation LAD, GTRI was able to determine the minimum hardware and software components required to establish a working FAISS LAD. In addition, once the GTRI evaluation LAD was operating, the LAD software was able to be evaluated to determine if any software licensing issues existed. The remainder of this document will present these results.

2. REQUIRED HARDWARE COMPONENTS

There are four categories of hardware components required for the LAD: (1) file server, (2) workstations, (3) peripherals and (4) communications hardware. This section will identify the minimum requirements for each of the hardware categories.

2.1 FILE SERVER

The MITRE LAD requires a minimum of one file server. Furthermore, Novell 2.15 requires the file server to be based on an Intel 80286 processor or greater. In addition, the configuration requirements for the file server must meet the following minimum criteria:

- Hard disk drive with a minimum of 20 MegaBytes free storage space
- 1MB RAM
- One 5.25" 720KB floppy disk drive
- CGA, EGA, VGA or Monochrome Monitor
- Compatibility with the Fibercom WhisperLAN fiber optic Ethernet board

In the GTRI evaluation LAD, both a Zenith 386 and a Monolithics based 486 system were tested in the role of file server. Both systems proved to be system compatible. The 486 system utilized a Maxtor LXT-340 SCSI disk drive and an Adaptec AHA-154X/1640 controller. This configuration required the acquisition of a special Adaptec device driver which was loaded during the Novell 2.15 installation.

2.2 WORKSTATIONS

The LAD utilizes two types of workstations: the general workstation and the FAISS workstation. The basic requirement for both workstations is DOS compatibility. The general workstation can range from an 8086 based system to an 80486 based system; whereas, the FAISS workstation must minimally be based on an 80386 processor. The additional requirements for the workstations include:

- Hard disk drive with a minimum of 17 MB free space

- 85K RAM free space for Novell drivers, Excelan drivers, Langard and DOS

- One 5.25" 720KB floppy disk drive

- CGA, EGA, VGA or Monochrome Monitor

- Compatibility with the Fibercom WhisperLAN fiber optic Ethernet board.

The GTRI evaluation LAD tested Zenith 80386 systems and Monolithics based 80486 systems in the role of general workstations, and an 80486 based FAISS workstation. During GTRI's testing and evaluation of the LAD, no hardware incompatibility problems were discovered.

2.3 PERIPHERALS

The peripherals supported by the LAD include gateways and network printers. The LAD requires a gateway in order to establish connectivity to DODIIS. The MITRE LAD utilizes a gateway connected directly to the Ethernet LAN. Therefore, the minimal requirements for the gateway include the capability to interface between the IEEE 802.3 Ethernet LAN and DSNET III, DIA's TCP/IP packet switching network access to DODIIS. The access to DODIIS through the gateway must be able to utilize FTP, TELNET, TN3270, and similar communication packages and terminal emulation programs.

The LAD documentation did not provide any information concerning network printers, therefore, the Novell documentation was consulted to determined the network printer capabilities. The network printer support requirements are primarily driven by the application software included in the MITRE LAD software. The application software formats the data directed towards a printer. The rest of the system simply insures that the data arrives at the file server and is sent to the printer.

2.4 COMMUNICATION

The LAN communication for the LAD is based on the FiberCom WhisperLAN 7070 Intelligent Network Controller Board, 62.5 micron fiber optic cable, and Excelan 205T Intelligent Controller software. Each file server and workstation must contain at least one Fibercom board.

3. REQUIRED SOFTWARE COMPONENTS

The LAD software is comprised of commercial drivers, system and application software; GTRI application software; and MITRE Corporation custom software, batch command files, and configuration data files. The LAD software was distributed among the 20 delivered disks as shown in the following tables.

Table 3-1. - LAD Software Distribution (16 Disks)

DISK	LABEL	CONTENTS
1	Compaq DOS	Compaq DOS 3.31
2	LMB 4/4	Excelan Software, Installation program, Novell Workstation Shell
3	System	LANgard Menu Files, Network Hosts Tables, Utilities, Batch Files
4-12	LAD Backup Disk #	LAD applications software in Compaq DOS 3.31 backup format
13-16	GTRI Backup Disk #	FAISS/GTRI application software in Compaq DOS 3.31 backup format

Table 3-2. - LAD Novell Supplemental (4 Disks)

DISK	LABEL	CONTENTS
1	LAN_DRV_XLN	Supplemental driver for Excelan Network board
2	GENDATA	Modified Novell disk to accommodate Excelan driver
3	AUXGEN	Modified Novell disk to accommodate Excelan driver
4	DSK_DRV_203	Supplemental driver for Compaq hard disk

In addition to the MITRE delivered software, Novell version 2.15 and any necessary device drivers must be separately purchased.

4. SOFTWARE LICENSING CONCERNS

The purpose of this section is to identify any software packages within the 18 September 1990 release of the MITRE LAD software which may give rise to software licensing requirements. The extent of GTRI's effort in this area consisted of determining which software packages within the MITRE LAD software were copyrighted. To determine which software packages were copyrighted, a disk utility was used to search for copyright notices embedded within the software programs. The licensing concerns identified in this section are not exhaustive; but rather, are meant to serve as an indicator that there are several licensing requirements to be addressed pertaining to the MITRE delivered software and to identify the majority of those requirements. The software licensing concerns are summarized in the following table. The table lists the software packages, the copyright owner, and the licenses required for the LAD. These licensing requirements are based on the 18 September 1990 MITRE software.

Table 4-1. - Minimum Software Licensing Requirements.

APPLICATION	COPYRIGHT HOLDER	LICENSES
Novell 2.15*	Novell	1/FS
Compaq MS-DOS 3.31	Compaq	1/WS
LANguard version 2 21	Johnson Computer Systems and Command Software Systems	1/WS
LAN WorkPlace Network Software for PC DOS Host Access Applications version 3.31	Excelan, Inc.	1/WS
ASW 1140 Novell Netware 286 2.15 SCSI Disk Driver version 3.1	Adaptec	1/WS
NVDET	Not Identified	1/WS
TN3270	Novell or Excelan Inc.	1/WS
ATTR	Ziff-Davis Publishing Co.	1/WS
*The MITRE software includes only the Novell workstation drivers.		
1/WS = One per workstation	1/FS = One per file server	

It is important to note that several of the software application programs that were included in this version are unnecessary for the LAD and would not be included

in the final software version; however, for completeness, they are mentioned in this section.

Table 4-2. - Optional Application Software Licensing.

APPLICATION	COPYRIGHT HOLDER	LICENSES
Folio VIEWS version 1.3	Folio Corporation	1/WS
Lotus Freelance Plus version 3.01	Lotus Development Corp., Phoenix Software Associates LTD	1/WS
MultiMate Advantage Professional Word Processor version 1.0	MultiMate International	1/WS
Presentation Library Series 100 version 3.01	General Parametrics Corporation	1/WS
Pictureit version 3.10	Phoenix Software Associates	1/WS

5. ACRONYM LIST

ACRONYM	MEANING
ATTR	ATTRIBUTE Program
CGA	Color Graphic Adapter
COTS	Commercial off the Shelf
DCN	Document Control Number
DIA	Defense Intelligence Agency
DODIIS	Department of Defense Intelligence Information System
DOS	Disk Operating System
DSNET III	Defense Secure Network III
EGA	Enhanced Graphics Adapter
FAISS	FORSCOM Automated Intelligence Support System
FCA	Functional Configuration Audit
FCJ2	FORSCOM J2 (Directorate of Intelligence)
FORSCOM	Forces Command
FTP	File Transfer Protocol
GTRI	Georgia Tech Research Institute
IEEE	Institute of Electronics and Electrical Engineers
IP	Internet Protocol
LAN	Local Area Network
LAD	LAN Access to DODIIS
LSO	LAD Security Officer
MB	MegaByte
NVDET	Network Virtual Data Entry Terminal
RAM	Random Access Memory
SA	Systems Administrator
TCP	Transmission Control Protocol
VGA	Video Graphics Array